CONFERENCE PROCEEDINGS

13th Annual International Bata Conference for Ph.D. Students and Young Researchers

DRIVE YOUR KNOWLEDGE BE A SCIENTIST

26/4/2017

Tomas Bata University in Zlín
Faculty of Management and Economics

Conference Proceedings

DOKBAT

13th Annual International Bata Conference

for Ph.D. Students and Young Researchers

Tomas Bata University in Zlín
Faculty of Management and Economics
Mostní 5139 – Zlín, 760 01
Czech Republic

Edited by: Ing. et Ing. Monika Hýblová

The publication was released within the DOKBAT conference, supported by the IGA project No. SVK/FaME/2017/002.

Many thanks to the reviewers who helped ensure the quality of the papers.

HOW TO CITE:

Surname, First Name. (2017). Title. In *DOKBAT 2017 - 13th Annual International Bata Conference for Ph.D. Students and Young Researchers* (Vol. 13). Zlín: Tomas Bata University in Zlín, Faculty of Management and Economics. Retrieved from http://dokbat.utb.cz/conference-proceedings/

ISBN: 978-80-7454-654-9

DOI: 10.7441/dokbat.2017

Expert guarantor:

Ing. Jana Matošková, Ph.D.

Manager and coordinator:

Ing. Marek Koňařík

Members of the organizing team:

Mgr. Iva Honzková

Ing. et Ing. Monika Hýblová

Ing. Markéta Slováková

Ing. et Ing. Pavlína Zapletalová

Ing. Martin Horák

Ing. et Ing. Karel Kolman

Contact information:

Ing. Martin Horák

Tomas Bata University in Zlín

Faculty of Management and Economics

Mostní 5139, 760 01 Zlín

Telephone number: +420 728 483 184

E-mail: mhorak@fame.utb.cz

CONTENT

EXTERNAL DEBT AND CAPITAL FLIGHT: IS HERE A REVOLVING DOOD HYPOTHESIS IN GHANA?

Ampah Isaac Kwesi, Gabor David Kiss

Abstract

Over the past few decades, Ghana in its bid to achieve economic growth and development resorted to external borrowings, propelling her into the status of Heavily Indebted Poor Country, when her debt reached unsustainable levels in the year 2000. Unfortunately, Ghana's economy reported only steady growth with successive periods of high inflation and undesirable balance of payments deficits leading scholars to ask whether external debt really contributes to growth. At the same time, there is now considerable evidence that the build-up in debt was accompanied by increasing capital flight from the country. Employing Autoregressive Distributed Lag (ARDL) model and dataset from 1970 to 2012, this paper investigated the apparent positive relationship between external debts and capital flights in Ghana. The results revealed that capital flight exerted a positive and statistically significant effect on external debt both in the short-run and long-run suggesting that if capital flight remains unchecked, it will continue to lead to massive external debt accumulation in Ghana. The Toda–Yamamoto Approach to Granger causality test also revealed the existence of a debt-fueled capital flight signifying the need for sound domestic debt management to deal with high external borrowing that is causing massive capital flight in the country.

Keywords: *Ghana; external debt; capital flight; cointegration; Granger causality; Heavily Indebted Poor Country.*

1 INTRODUCTION

Every country around the globe aims at achieving growth and development. Nevertheless, this is only possible if a country has sufficient resources to finance it. In developing countries especially the ones in Sub-Sahara Africa, the resources are not readily available to fund the optimal level of economic growth and development (World Bank, 2009). Basically, for this reason, many developing countries longing for economic growth undoubtedly resort to external financing to bridge the disparity between their savings and investments. Besides, external borrowing is preferable to domestic borrowing because the interest rates normally charged by the international financial institutions like the International Monetary Funds (IMF) and the World Bank is about half to the one charged by the domestic financial institutions (Safdari and Mehrizi, 2011).

However, the massive and continuous accumulation of external debt by Sub-Saharan Africa countries over the past few decades have given rise to concerns about the detrimental effects of such debt on economic growth, principally known as the "debt overhang" effect. The "debt overhang" effect indicates that high level of external borrowing discourage private investment, which adversely affects growth as future higher taxes are expected to repay the debt. Again, fears are often expressed that increasing external debt burdens will threaten financial stability with impacts for the economy, or that increases in debt will create political pressures that will make acceleration of inflation inevitable (Ajayi and Khan, 2000).

Ghana in its bid to achieve economic development resorted to external borrowings over the years, and so face the same question of whether external debt contributes to its economic progress. For instance, from an estimated total of $6 million at the end of 1960, the external debt of Ghana rose to US$591 million (114%) in 1972 and then rose further to US$6 billion in nominal terms at the end of 2000. In the year 1999, when the Heavily-Indebted Poor Countries (HIPC) initiative was introduced by the International Monetary Fund (IMF) and the World Bank, Ghana was judged to be an HIPC country with unsustainable debt reaching over 100% of GDP in 2000 (Institute of Economic Affairs (IEA), 2012). The country subsequently benefited from debt relief under the initiative in 2004 when it met the full debt policy conditions.

Subsequently, in 2006, Ghana, additionally benefitted from the Multilateral Debt Relief Initiative (MDRI), which presented total debt relief owed to the International Development Association (IDA) of the World Bank, the IMF, and the African Development Bank (AfDB). The HIPC and MDRI reliefs triggered a massive reduction in Ghana's debt to approximately 26% of GDP, which was seen as a sustainable level. Subsequent after these reliefs, Ghana's debt has been growing at a rapid pace basically to finance infrastructure and development projects. This has mainly caused the post-HIPC/MDRI debt level to increase, reaching about 67% of GDP in 2014. Warnings are being sounded, including the IMF and other development partners, that the rate of borrowing could return Ghana's debt to unsustainable levels again. Some schools of the thought even argue that Ghana could go back to HIPC status yet again (IEA, 2012).

Furthermore, as the severity of external indebtedness becomes so pronounced, so too is capital flight. The latest estimates of capital flight from Sub-Saharan African countries show that Ghana lost a total of $12.4 billion between 1970 and 2010 (Boyce and Ndikumana, 2012). This amount exceeds official development aid and Foreign Direct Investment for the same period. Some in the international donor community have regarded this outward movement of capital as compounding the problem of external debt management and have suggested that meaningful discussions of the solutions to external debt will need to wait until the issues of capital flight are dealt with. Indeed, some researchers have suggested that solutions to capital flight be made a precondition to discussions on external debt relief (Eggerstedt, Hall and Wijnbergen, 1994).

Even though, Ghana is one of the heavily-indebted countries where the issue of capital flight has been significant. There is, however, no comprehensive study on the consequences of capital flight on external debt with particular reference to Ghana. The main objective of this study is to examine the long run and short run relationship as well as the level of causality between external debt and capital flight using time series dataset for Ghana from 1970 to 2012. By examining the covariation between external debt and capital flight, the study hopes to provide vital information that would be of help in formulating effective and efficient policies towards minimizing macroeconomic imbalances caused by heavy debt obligation and capital flight in Ghana.

This study is organized into five parts. The first part, which is the introductory chapter, presents a background to the study highlighting the problem statement, the objectives of the study, the scope as well as the organization of the study. The second part presents a review of relevant literature. The third presents the methodological framework and techniques employed in conducting the study. Section four examines and discusses the results, and major findings concerning the literature and the final part present the findings and policy implications of the study.

2 LITERATURE REVIEW

The relationship between external borrowing and capital flight has been well documented in the literature, which recognizes that annual flows of foreign borrowing constitute the most consistent determinant of capital flight. A review of the literature suggests that the simultaneous occurrence of capital flight and foreign debt in a country is theoretically plausible. In the case of Argentina, Dornbusch and de Pablo (1987) noted that commercial banks in New York had lent the government the resources to finance capital flight which returned to the same bank as deposits. In a sample of 30 sub-Saharan countries over the period 1970-96, Ndikumana and Boyce (2003) found that for every dollar of external debt acquired by a country in SSA in a given year, on average, roughly 80 cents leave the country as capital flight. Their results also support the hypothesis by Collier, Hoeffler, and Pattillo (2004) that a one-dollar increase in debt adds an estimated 3.2 cents to annual capital flight in subsequent years. This result leads to the question of why countries borrow heavily while at the same time capital is fleeing abroad. From the literature, there are two main points of view;

- The indirect theory by Morgan Guaranty Company (1986)
- Direct Linkages Theories by Boyce (1992).

2.1 Indirect theory

According to Morgan Guaranty Company View (1986), the simultaneous occurrence of external debt accumulation and the outflow of capital from developing countries is not a natural coincidence but rather the track record of bad policies that caused capital flight to rise is the same policies responsible for increases in external debt accumulation. This view of the external debt and capital flight linkage maintains that the relationship between the two may be attributed to poor economic management, policy mistakes, corruption, rent-seeking behavior, weak domestic institutions, and the like. For instance, the Morgan Guaranty Trust Company (1986) contends that indirect factors such as low economic growth, overestimated exchange rates, and poor fiscal management by governments in developing countries is not only causing capital flight but also creating demand for foreign borrowing.

Another contention of the indirect theory by Morgan Guaranty Company (1986) is that capital inflows (especially during surges of capital flows) lead to risky or unsound investment decisions and over-borrowing. When governance structure and mechanisms for administrative controls and prudential regulation are weak or fragile, money borrowed from abroad can end up being pocketed by the domestic elite (and usually transferred into private accounts abroad). Which is spent on conspicuous consumption, or allocated to showcase and unproductive development projects that do not generate foreign exchange to finance external debt servicing? So capital flight and external borrowings are manifestations and responses to unfavorable domestic economic conditions. However, this perspective on the debt-flight association is unable to provide a rationale for the observed year-to-year contemporaneous linkages between debt and capital flight in a country. Indeed, an alternative scenario of the complicated nature of the debt-flight relationship is that lower debt inflows mirror and contribute to deteriorating local economic conditions that result in greater capital flight.

2.2 Direct Theory

According to Ayayi (1997), the direct linkages theory contends that external borrowing directly causes capital flight by providing the resources necessary to effect flight. Cuddington (1987) and Henry (1986) showed that in Mexico and Uruguay, capital flight occurred contemporaneously with increased debt inflows, thus attesting to a strong liquidity effect in these countries. According to this theory, external resources acquired as loans can create conditions for capture as "loot" that individuals (often the elite) appropriate as their own. In fact, according to Edser and Bayer (2006), the (captured) funds may not even enter the country at all. Instead, only accounting entries are entered in the respective accounts of the financial institutions. Boyce (1992) further distinguishes four possible equal links between external debt and capital flight.

The first is the **debt-driven capital flight**. According to Boyce (2012), in a debt-driven capital flight, residents of a country are motivated to move their assets to foreign countries due to excessive external borrowing by the domestic government. The outflow of capital is, therefore, in response to fear of the economic consequences of heavy external indebtedness. The effects of debt-driven capital flight include; expectations of exchange rate devaluation and crowding out effect on domestic capital, avoidance of expropriation risk and the imposition of high taxes, among other distortions. In a debt crisis, the domestic investors may expect to pay higher taxes to the government to meet debt service obligations. So the desire to avoid such taxes in the future causes capital flight is. The second is **Debt-fueled capital flight**. In a debt-fueled capital flight, the capital borrowed provides both the motive and the resources for capital flight. This form of capital flight is motivated by the inflow of foreign capital in the form of loans, which are then siphoned away by corrupt leaders (Ajayi, 1997). There are two processes through which money is siphoned abroad. Firstly, the domestic government could acquire foreign capital (foreign exchange) by external borrowing and then sell the currency to domestic residents who transfer it abroad either by legal or illegal means. Secondly, the government can on-lend funds to private borrowers through a national bank, and the

borrowers, in turn, transfer part or all of the capital abroad. In this case, external borrowing provides the necessary fuel for capital flight (Ajayi, 1997).

The **Flight-driven External Borrowing** is a situation where after the capital flight, which dries up domestic resources, a gap between savings and investment rises, so the government borrows more resources from external sources to fill the resource gap created in the domestic economy. This situation occurs due to the resource scarcity in the domestic economy, both the public and private sectors seek for a replacement of the lost resources by acquiring more loans from external creditors. The external creditor's willingness to meet this demand can be attributed to different risks and returns facing residents and non-resident capital. "The systemic differences in the risk-adjusted financial returns to domestic and external capital could also arise from disparities in taxation, interest rate ceilings and risk-pooling capabilities" (Lessard and Williamson, 1987). Finally, the **Flight-fueled External Borrowing** occurs when the domestic currency siphoned out of the country through capital flight re-enters in the form of foreign currency that finances external loans to the same residents who transferred the capital. In other words, the domestic capital is converted to foreign exchange and deposited in foreign banks, and the depositor then takes a loan from the same bank in which the deposit may serve as collateral. This phenomenon is also known as round-tripping or back-to-back loans (Boyce, 1992).

At the empirical level, Saxema & Shanker (2016) examined the dynamics of external debt and capital flight in the India's economy; they authors used Two Staged Least Square (2SLS) method to investigate the relationship during the period 1990-2012. The result of the study indicates a positive relationship between external debt and capital Flight in India.

Usai & Zuze (2016), provided a similar analysis in Zimbabwe using the Vector Autoregression. The main objective of their study was to establish the direction of causality between capital flight and external debt for the period 1980-2010 in the essence of the revolving door hypothesis. Their study employed the Granger causality test to investigate this relationship. The pairwise Granger causality test revealed the existence of a uni-directional relationship running from external debt to capital flight. Their result indicates that for Zimbabwe, external debt has had an influence on capital flight and not the other way round.

Hassan and Abu Bakar (2016), also examine the impact of external debt on the growth and development of capital formation in Nigeria. Time series data was used for a period from 1980 to 2013, employing the Autoregressive Distributed Lag (ARDL) modeling. The result of stationarity tests showed that the variables are both I(0) and I(1) necessitating the use of the ARDL. The ARDL estimation also revealed the presence of long run relationship amongst the variables. However, the study showed that the variables were related independently in the long-run. The result also indicated a negative and statistically significant association between external debt and capital formation while savings came out as the only variable with a bidirectional causal relationship amongst the variables. The interest rate was also statistically significant even though it was weak. The other variables were found to be of unidirectional causal effects.

Boyce and Ndikumana (2014) also examine the impacts of capital flight with linkages with external borrowing in Sub-Saharan Africa. The results of the study established that Sub-Saharan Africa is a net creditor to the rest of the world because the private external assets exported exceed its external public liabilities. This finding suggests the existence of debt-fueled capital flight. The results also show a debt overhang effect, as increases in the debt stock spur additional capital flight in later years and underscore the of natural resource-rich countries. The studies also emphasize the significant role of government institutions and structures in alleviating the dangers of capital flight, while political uncertainty is found to be key a determinant of capital flight.

In a nutshell, the relationship between capital flight and external debt have been the focus of many types of research and policymakers. Under conventional expectations, the bi-directional relationship between capital flight and external debt which is also known as the revolving door hypothesis seems to be a more common research finding. However, there is no discussion or empirical study on the relationship

between external debt and capital flight in the Ghanaian context. The researchers feel the need to fill this void by empirically examining the relationship between this variable from 1970 to 2012.

3 METHODOLOGY

3.1 Empirical Model Specification

Based on the framework illustrated in the review, the study adopted the method used by Saxema (2016) for the Indian economy, Ajilore (2014) for the Nigerian economy and Demir (2004) for the Turkey's economy to mimic the bi-directional causality between the main variables of the study. The model, therefore, can be specified as:

$$InEXT_t = \alpha_1 + \beta_1 CF_t + \beta_2 InGDP_i + \beta_3 POLITY_i + \beta_4 INF_t + \beta_5 FD_t + \varepsilon_t .....(1)$$

$$CF_t = \alpha_1 + \partial_1 InEXT_i + \partial_2 \ln GDP_i + \partial_3 POLITY_i + \partial_4 INF_i + \varepsilon_t .....(2)$$

Where *EXT* is total external debt, *CF* is capital flight, *GDP* is the real gross domestic product, *FD* is financial development, *INF* is inflation and Polity represent political stability. Also, the coefficients, β_1, β_2---- $\beta 5$, as well as ∂_1, ∂_2---- ∂_4 are the output elasticities of the factor inputs. ε_t is the stochastic error term and α_0 is the constant term.

The variable description and measurement, as well as their source, are presented in Table 1. The datasets used in the study spans from 1970 to 2012. This is because, after independence, Ghana started espousing capital and accumulating external debt in the early1970s.

Table 1: Variables in the model: Definitions and Sources

Variable	Definition	Source
External Debt (EXT)	Total external debt in a million US dollars.	World Development Indicators (2016 online database)
Capital Flight (CF)	Capital flight expressed as the ratio of GDP	Database of Ndikumana & Boyce (2012)
Gross Domestic Product (GDP)	Real Gross Domestic Product	WDI (2016 online database)
Political Stability (POLITY)	Political Stability is measured by the country's elections competitiveness and openness, the nature of political involvement in general, and the degree of checks on administrative authority. The estimate gives the country's score on the aggregate indicator, in units of a standard normal distribution, i.e. ranging from -10 to +10.	Polity 2 data series from Polity IV database
Inflation (INF)	Inflation rate is the growth rate of the CPI index	WDI (2016 online database)
Financial Development (FD)	Money supply as a percentage of GDP	WDI (2016 online database)

Source: Authors Own Construction.

3.2 Estimation Procedure

Cointegration test

The existence of the long run equilibrium relationship between external debt and capital flight can be investigated by using several methods. The most commonly used methods include Engle and Granger test, fully modified OLS procedure (FMOLS) of Phillips and Hansen's, maximum likelihood based on Johansen and Johansen-Juselius tests. All these methods require that the variables in the system are integrated of order one, I(1). Further, these methods are considered as weak as these methods do not provide robust results for small samples or structural breaks. In fact, these methods are still employed by many researchers who strongly argue that they are the most accurate methods to apply on *I*(1) variables. However, researchers like Hakkio and Rush (1991) find some disadvantages with the above techniques. They argued that two common misconceptions exist in these standard Cointegration techniques. First, long-run relationships exist only in the context of cointegration of integrated variables of the same order. Second, standard methods of estimation and inference (e.g. F-test) will render inconsistent and inefficient parameters in a cointegrating relationship. Due to these problems, a recently developed autoregressive distributed lag (ARDL) approach to cointegration has become significant in recent years. The ARDL modeling approach was initially introduced by Pesaran and Shin (1999) and further extended by Pesaran et al. (2001). This approach has several econometric advantages in comparison to other cointegration methods. One major advantage of ARDL approach is that it can be applied irrespective of the degree of integration whether I(1) or I(0). Secondly, ARDL approach provides robust results in small sample sizes, and estimates of the long-run coefficients are well consistent in small sample sizes (Pesaran & Shin 1999). Furthermore, a dynamic error correction Term (ECT) can be derived from ARDL that incorporates the short-run with the long-run estimates without losing long run information. Given the above advantages, we use ARDL approach for cointegration analysis and the resulting ECT.

By means of the ARDL method for cointegration, the following restricted (conditional) version of the ARDL model is estimated to test the long-run relationship between external debt and capital flight. This framework is implemented by modeling equation (2) as a conditional ARDL, as:

$$\Delta LnEXT_t = \beta_o + \beta_1 CF_{t-1} + \beta_2 \ln GDP_{t-1} + \beta_3 POLITY_{t-1} + \beta_4 INF_{t-1} + \beta_5 FD_{t-1} + \sum_{i=1}^{p} \alpha_1 \Delta \ln EXT_{t-i} +$$

$$\sum_{i=1}^{p} \alpha_2 \Delta CF_{t-i} + \sum_{i=1}^{p} \alpha_3 \Delta \ln GDP_{t-i} + \sum_{i=1}^{p} \alpha_4 \Delta POLITY_{t-i} + \sum_{i=1}^{p} \alpha_5 INF_{t-i} + \sum_{i=1}^{p} \alpha_6 FD_{t-i} + \upsilon_t \quad (3)$$

Where Δ denotes the first difference operator, *P* is the lag order selected by Akaike's Information Criterion (AIC), β_0 is the drift parameter while υ_t is white noise error term which is ~N (0, δ^2). The parameters α_i are the short-run parameters and β_i are the long-run multipliers. All the variables are defined as before.

Long-run and short-run relationships

Given that cointegration has been established from the ARDL model, the next step is to estimate the long-run and error correction estimates of the ARDL and their asymptotic standard errors. The long run is estimated by:

$$\ln EXT_t = \mu_0 + \sum_{i=0}^{p} \beta_1 CF_{t-i} + \sum_{i=0}^{p} \beta_2 \ln GDP_{t-i} + \sum_{i=0}^{p} \beta_3 \ln POLITY_{t-i} + \sum_{i=0}^{p} \beta_4 INF_{t-i} + \sum_{i=0}^{p} \beta_5 FD_{t-i} + \nu_t \quad (4)$$

This is followed by the estimation of the short-run parameters of the variables with the error correction representation of the ARDL model. By applying the error correction version of ARDL, the speed

of adjustment to equilibrium is determined. When there is a long-run relationship between the variables, then the unrestricted ARDL error correction representation is estimated as:

$$\Delta \ln EXT_t = \phi_0 + \sum_{i=0}^{p} \delta_1 \Delta CF_{t-i} + \sum_{i=0}^{p} \delta_2 \Delta \ln GDP_{t-i} + \sum_{i=0}^{p} \delta_3 \Delta \ln POLITY_{t-i} + \sum_{i=0}^{p} \delta_4 INF_{t-i} + \sum_{i=0}^{p} \delta_5 FD_{t-i} + \gamma ECT_{t-1} + \Omega_t \quad (5)$$

Where γ is the speed of adjustment of the parameter from the short-run to long-run equilibrium following a shock to the system and ECT_{t-1} is the residuals obtained from equations (4). The coefficient of the lagged error correction term γ is expected to be negative and statistically significant to confirm the existence of a cointegrating relationship among the variables in the model. The value of the coefficient, γ, which signifies the speed of convergence to the equilibrium process, usually ranges from -1 and 0. -1 signifies perfect and instantaneous convergence while 0 means no convergence after a shock in the process.

In addition, Pesaran and Pesaran (1997) argued that it is extremely important to ascertain the constancy of the long-run multipliers by testing the above error-correction model for the stability of its parameters. The commonly used tests for this purpose are the cumulative sum (CUSUM) and the cumulative sum of squares (CUSUMQ), both of which have been introduced by Brown et al. (1975).

4 EMPIRICAL RESULTS

Table 2 presents the descriptive statistics of the variables used in the study. From the table, the total number of observations used was 43, and it was found that all the variables have positive means. Further examination of the table reveals that all the variables are slightly negatively skewed except inflation and real GDP. The deviation of the variables from their means as shown by the standard deviation gives an indication of wide growth rate (fluctuation) of these variables over the study period. The Jarque-Bera statistic also shows that the null hypothesis that the series are drawn from a normally distributed random process cannot be rejected except external debt and financial development. This is shown by their probability values.

Table 2: Summary Statistics of the variable

	LNEXT	CF	LNGDP	POLITY	INF	FD
Mean	9.474410	3.959575	9.806741	6.162791	31.63969	22.62380
Median	9.572204	7.633468	9.735963	7.000000	24.56542	22.66524
Maximum	10.09917	9.985304	10.62263	8.000000	122.8745	34.10831
Minimum	8.728203	-8.958086	9.324754	0.000000	3.030303	11.30499
Std. Dev.	0.398414	7.193499	0.340513	2.126144	28.84950	6.272417
Skewness	-0.475995	-1.104768	1.001649	-1.478655	1.958858	-0.011674
Kurtosis	1.978936	2.258661	3.270420	3.885123	6.355115	1.984831
Jarque-Bera	3.491699	9.731676	7.321340	17.07301	47.66781	1.847412
Probability	0.174497	0.007705	0.025715	0.000196	0.000000	0.397045
Sum	407.3996	170.2617	421.6899	265.0000	1360.507	972.8234
Sum Sq. Dev.	6.666822	2173.350	4.869874	189.8605	34956.33	1652.415
Observations	43	43	43	43	43	43

Although the ARDL cointegration approach does not require unit root tests, nevertheless we need to conduct this test to ensure that none of the variables are the integrated of order 2, thus, I (2), because, in the case of I (2) variables, ARDL procedures makes no sense. If a variable is found to be I(2), then the computed F-statistics, as produced by Pesaran et al. (2001) and Narayan (2005) can no longer be valid. The results of the Augmented Dickey-Fuller test as shown in Table 3 indicate that all the variables are non-stationary

at their levels except capital flight and polity. However, all of the variables are stationary in the first difference at the 1% level of significance. This implies that all other variables are integrated of order one or I(1). Since the variables are shown to be either I(0) or I(1), we can proceed to test for cointegration using the ARDL approach to cointegration.

Table 3. Results of Unit Root Test: ADF Test

Levels			First Difference			
Var.	ADF-Statistic	Lag	Var.	ADF-Statistic	Lag	*OI*
LNEXT	-0.974585 (0.7537)	1	DLNEXT	-6.396770(0.0006) ***	0	*I*(1)
CF	-7.826107(0.0000) ***	0	DCF	-6.198752(0.0000) ***	0	*I*(0)
LNGDP	-1.002320(0.9959)	0	DLNGDP	-5.232315(0.0001) ***	0	*I*(1)
POLITY	-3.309668(0.0207) **	0	DPOLITY	-8.427628(0.0000) ***	0	*I*(0)
INF	-2.475187(0.1288)	1	DINF	-11.40022(0.0000) ***	0	*I*(1)
FD	-1.240119 (0.6481)	0	DFD	-6.12630(0.0000) ***	0	*I*(1)

Source: Authors Own Construction

The results of the bound test procedure for cointegration analysis between external debt and its determinant are presented in Table 4. As shown in Table 4, the joint null hypothesis of lagged level variables (that is, variable addition test) of the coefficients being zero (no cointegration) is rejected at 1 percent significance level. This is because the calculated F-statistic value of 5.104335 exceeds the upper bound critical value of 4.15 at 99%.This means that there exist a long run relationship between external debt and capital flight.

Table 4: Results of Bounds Tests for the Existence of Cointegration

	10% Sign. Level		5% Sign. Level		2.5% Sign. Level		1% Sign. Level	
K	I(0)	I(1)	I(0)	I(1)	I(0)	I(1)	I(0)	I(1)
5	2.08	3	2.39	3.38	2.7	3.73	3.06	4.15
F-statistic	5.104335							

Source: Authors Own Construction

As shown in Table 5, the results indicate theoretically correct and prior expected signs for almost all of the explanatory variables. Capital flight expressed as a ratio of GDP, real GDP, political stability, inflation and financial development all have the expected sign and exert a statistically significant effect on external debt in the long-run. The constant is also negative and statistically significant too. The positive and statistically significant coefficient of the capital flight means that increases in capital flight have the potential of stimulating external debt in Ghana at the aggregate level over the study period. This result concurs with the findings of Saxema (2016) for the Indian economy. Ndikumana & Boyce (2014) also found a similar result for Sub-Saharan Africa.

Table 5: Estimated Long-Run Coefficients using the ARDL Approach

Variable	Coefficient	Std. Error	t-Statistic	Prob.	
CF	0.075848	0.026967	2.812602	0.0090	***
LNGDP	1.227552	0.260778	4.707270	0.0001	***
POLITY	-0.066100	0.029944	-2.20748	0.0360	**
INF	0.006712	0.003531	1.900671	0.0681	*
FD	-0.031654	0.013404	-2.361444	0.0257	**
C	-1.78978	2.437822	-0.725639	0.4743	

Source: Authors Own Construction Note: *** denote significance at 1%, ** denote significance at 5% and * denote significance at 10%

The error correction model that calculates the error correction term for the adjustment to short run equilibrium in equation 1 when there is any disequilibrium in the system as a result of a shock is given as:

```
Cointeq = LNEXT - (0.0758*LNCF + 1.2276*LNGDP  -0.0661*POLITY +
   0.0067*INF  -0.0317*FD  -1.7690 )
```

Once the long-run relationships among the variables have been established within the ARDL framework, the study further estimates their short-run relationships. According to Engle and Granger (1987), when variables are cointegrated, their dynamic relationship can be specified by an error correction representation in which an error correction term (ECT) computed from the long-run equation must be incorporated to capture both the short-run and long-run relationships. From the result in Table 6, it is again evident that the results of the short-run dynamic coefficients on capital flight, Polity, financial development, and inflation have the expected positive and negative signs respectively as in the long-run and exert statistically significant coefficients on external debt. The Gross Domestic Product, though is positive in the long-run, it is not statistically significant coefficients on external debt. The coefficient of the error correction term is negative as expected. Additionally, the value of the external debt lagged one period on current values of external debt in the short-run is negative and statistically significant at 10 percent significant level. The implication is that current values of external debt are negatively affected by their previous year's values.

Table 6: Estimated Short-Run Error Correction Model using the ARDL Approach

Variable	Coefficient	Std. Error	t-Statistic	Prob.	
D(LNEXT(-1))	-0.276514	0.152967	-1.80775	0.0818	*
D(CF)	0.003578	0.00097	3.687917	0.001	***
D(LNGDP)	0.151367	0.118911	1.272944	0.2139	
D(POLITY)	-0.008464	0.004405	-1.921702	0.0653	*
D(INF)	0.000925	0.000285	3.243912	0.0031	***
D(FD)	-0.012195	0.003363	-3.626229	0.0012	***
ECT(-1)	-0.149519	0.023607	-6.333583	0.0000	***

Source: Authors Own Construction Note: *** denote significance at 1%, ** denote significance at 5% and * denote significance at 10%

Also, the coefficient of the lagged error correction term (ECT_{t-1}) is negative and highly significant at 1 percent significance level. This confirms the existence of the cointegration relationship among the variables in the model yet again. The ECT stands for the rate of adjustment to restore equilibrium in the dynamic model following a disturbance. The coefficient of the error correction term is 0.1495. This means that the deviation from the long-term growth rate in GDP is corrected by approximately 15 % each year due to adjustment from the short-run towards the long-run. In other words, the significant error correction

term suggests that more than 15 percent of disequilibrium in the previous year is corrected in the current year.

Hansen (1992) warned that the estimated parameters of a time series data might vary over time. As a result, it is crucial to conduct parameter tests since model misspecification may arise as a result of unstable parameters and thus has the tendency of biasing the results. In order to check for the estimated variable in the ARDL model, the significance of the variables and other diagnostic and structural stability tests of the model are considered. Table 7 shows the results for the model Diagnostics and Goodness of Fit.

Table 7: Model Diagnostics and Stability Tests

R-Squared (R^2)	0.986493	Adjusted R Squared	0.980491
S.E. of Regression	0.049857	F-stat. F(9, 28)	164.3359[.000]
Mean of Dependent Var.	9.528813	S.D. of Dependent Var	.356944
Residual Sum of Squares	0.067113	Equation Log-likelihood	71.04747
DW-statistic	2.179113		

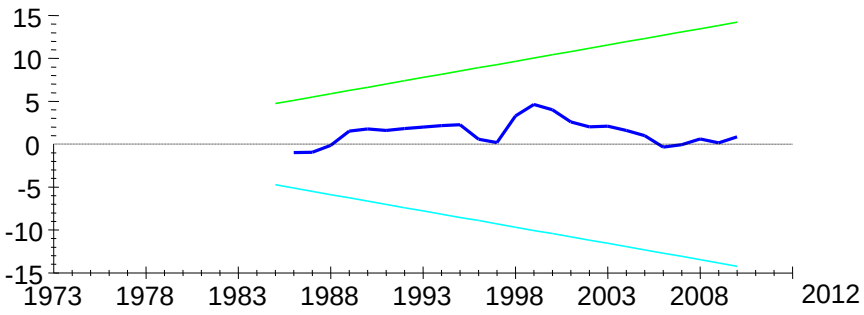
Diagnostics		**LM Version**	**F Version**
Serial Correlation	$\chi 2_{Auto}$ (1)	1.5249[.217]	91977[.348]
Functional Form	$\chi 2_{Reset}$ (1)	.18930[.664]	.11014[.743]
Normality	$\chi 2_{Norm}$ (2)	3.0777[.215]	
Hetero	$\chi 2_{white}$ (1)	1.8177[.178]	1.8085[.187]

Source: Authors Own Construction

The diagnostic test shows that there is no evidence of autocorrelation and the test proved that the error is normally distributed. Additionally, the model passes the white test for heteroskedasticity as well as the RESET test for correct specification of the model. A DW-statistic of 2.179113 indicates that there is no strong serial correlation in the residuals. The overall regression is also significant at 1 percent as can be seen from the R-squared and the F-statistic in Table 5 above. The R-squared value of 0. 986493 indicates that about 99 percent of the change in the dependent variable (LY) is explained by changes in the independent variables. Also, an F-statistic value of 164.3359 suggests the joint significance of the determinants in the ECT.

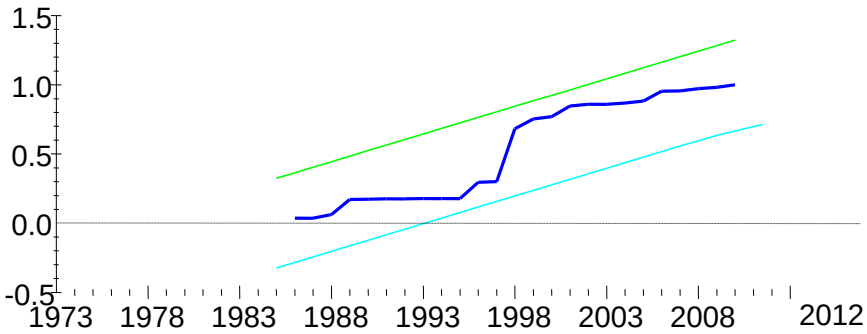
The plots of the cumulative sum of recursive residuals (CUSUM) and the cumulative sum of squares of recursive residuals (CUSUMSQ) stability tests as depicted in Figures below indicate that all the coefficients of the estimated model are stable over the study period since they are within the 5 percent critical bounds.

Figure1: Plots of the cumulative sum of recursive residuals (CUSUM)



Source: Authors Own Construction

Figure2: Plots of the cumulative sum of square of recursive residuals (CUSUM)



Source: Authors Own Construction

To establish the predictability of capital flight on external debt, Granger causality test was applied to measure the linear causation among these variables. The usual Granger causality test proposed by Granger (1969) has been found to have plausible shortcomings of specification bias and spurious regression. Engel and Granger (1987) defined X and Y as being cointegrated if the linear combination of X and Y is stationary, but each variable is not continually stationary. Therefore, Engel and Granger (1987) pointed out that when variables are non-stationary at the same level, then the usual Granger causal test will be invalid. To mitigate these problems, Toda and Yamamoto (1995) and Dolado and Lutkepohl (1996) based on augmented VAR modeling, introduced a modified Wald test statistic. This procedure has been found to be superior to the usual Granger causality tests because it can be estimated irrespective of whether the series is I(2), I(1) or I(0). Table 8 present the result of the Toda-Yamamoto Granger causality test.

Table 8: Toda-Yamamoto Causality Test

Null Hypothesis	Obs	F-Statistic	Prob.
EXT does not Granger Cause CF	33	14.99797	0.0410
CF does not Granger Cause EXT		9.562798	0.3870

Source: Computed by the authors using Eviews 9.

The Toda-Yamamoto Causality Test causality test results in Table 8 indicate that the null hypothesis of capital flight does not Granger cause capital flight is not rejected implying that capital flight does not Granger cause external debt. However, the null hypothesis that external debt does not Granger cause capital flight is rejected, implying external debt indeed Granger causes capital flight. This means that there exists a uni-directional causality running from external debt to capital flight indicating the existence of a debt-fueled capital flight. These results show that, if unchecked, the external debt will continue to cause massive capital flight hence leaving the country with a resource deficit.

5 CONCLUSION AND POLICY IMPLICATIONS OF THE STUDY

This paper examined the relationship between capital flight and economic growth in Ghana employing the autoregressive distributed lag (ARDL) approach to cointegration for the period 1970 to 2012.

The empirical evidence presented in this paper suggests that there is both short-run and long-run relationship between external debt and capital flight in Ghana signifying that increases in capital flight lead to increase in external debt and that if the capital flight is unchecked, it will continue to cause a substantial amount of external debt. However, the Granger causality test results revealed a unidirectional causality running from external debt to capital flight. This implies that large capital flight in Ghana to a large extent is financed by external borrowing, a phenomenon known as debt-fueled capital flight. This result implies that creditors knowingly or unknowingly financed the export of private capital rather than investment. Such lending is often motivated by political and strategic considerations. Again, it could also imply a lack of diligence on the part of creditors before the loans were approved. A policy implication for external debt management is to insist that foreign creditors be made to bear the consequences of irresponsible or politically motivated lending while government should accept the liability of those portions of the debt incurred my past government that was used to finance development projects and programs.

In addition to greater accountability on the creditor side, it is equally important that Ghana as a country should establish mechanisms of transparency and accountability with respect to decision-making processes regarding external debt management. It is important that the government guarantee that any external loans acquired are invested into productive projects that give higher returns on investment. If these loans are invested into such productive projects, it enhances the country`s debt serving capacity thereby reducing the incidence of falling into a debt crisis. Furthermore, the government also needs to timely pay its outstanding obligations to avoid a debt trap which can also spill over into a debt crisis. These measures can thus reduce capital flight since the debt-driven capital flight is exacerbated when conditions for debt crises exists.

This result also suggests an additional rationale for the annulment of debts since the continuous accumulation of external debt may signal increased risks, to which private capital owners may respond by pulling out their capital. The government needs to discuss with International Financial Institutions, the World Bank and other bilateral loan providers for the possible debt annulment or debt rescheduling.

References

Ajayi, S. I. (1997). An analysis of external debt and capital flight in the severely indebted low-income countries in the Sub-Sahara Africa," IMF, *Working Paper* WP/97/68.

Ajayi, S. I., & Khan, M. S. (2000). *External debt and capital flight in Sub-Saharan Africa*. International Monetary Fund.

Ajilore O.T (2014). External debt and capital flight: Is there a revolving door hypothesis. *South African Journal of Economic and Management Sciences*, 5(2), 211-224 https://doi.org/10.4102/sajems.v8i2.1229

Boyce, J. K. (1992). The revolving door? External debt-capital flight: A Philippine case study. *Journal of World Development*, 20(3), 335-349. https://doi.org/10.1016/0305-750X(92)90028-T

Collier, P., Hoeffler, A., & Pattillo, C. (2001). Flight capital as a portfolio choice. *World Bank Economic Review*, 15(1), 55-80. https://doi.org/10.1093/wber/15.1.55

Cuddington, J. (1987). Macroeconomic determinants of capital flight. In Donald Lessard and John Williamson (ed.). Capital Flight and Third World Debt. *Institute for International Economic*s, Washington, DC: 85-96.

Demir, F. (2004). A failure story: Politics and financial liberalization in Turkey, revisiting the revolving door hypothesis. *World Development Bank,* 32(5): 851-869. https://doi.org/10.1016/j.worlddev.2003.11.007

Dooley, M. P. (1988). Capital flight: A response to differential financial risks. *IMF Staff Papers,* 35(3) 422-436. https://doi.org/10.2307/3867180

Dornbusch, R. and de Pablo (1987), Comment in Lessard, D. R. and Williamson, J. (ed.s) (1987), "Capital flight and third world debt," *Washington Institute for International Economics.*

Eggerstedt, H., Hall. R. B., & Wijnbergen, S. V, (1994). Measuring Capital Flight: A Case Study of Mexico, *World Development*, 23, 211-232. https://doi.org/10.1016/0305-750X(94)00123-G

Engle, R. F., & Granger, C. J. (1987). Cointegration and error-correction representation, estimation, and testing. *Econometrica*, *55*(2), 251-278. https://doi.org/10.2307/1913236

Frimpong, J. M., & Oteng-Abayie, E. F. (2006). The impact of external debt on economic growth in Ghana: A cointegration analysis, *Journal of Science and Technology*, 26(3), 121- 130.

Hakkio, Craig S. & Rush, Mark, (1991). Cointegration: how short is the long run? Journal of International Money and Finance, 10(4), 571-581. https://doi.org/10.1016/0261-5606(91)90008-8

Hansen, B. E. (1992). Tests for parameter stability in regressions with I(1) Processes. *Journal of Business and Economic Statistics, 10*(3), 321-335.

Institute of Economic Affairs (2012), Ghana's Debt Profile and sustainability, A Public Policy Institute, Ghana.

Lessard, D.R. & Williamson J. (1987), Capital Flight and Third World Debt, *Washington Institute for International Economics.*

Morgan Guaranty Trust Company (1986) "LDC Capital Flight" *World Financial Market*, (2), 13-16.

Ndikumana, L. & J.K. Boyce (2011). Capital flight from Sub-Saharan African countries: linkages with external borrowing and policy options. *International Review of Applied Economics* 25(2), 149–70. https://doi.org/10.1080/02692171.2010.483468

Ndikumana, L., & Boyce, J. K. (2003). Public debts and private assets: Explaining capital flight from Sub-Saharan African Countries. *World Development*, 31(1), 107-130. https://doi.org/10.1016/S0305-750X(02)00181-X

Pesaran, M. H., & Pesaran, B. (1997). *Working with micro fit 4.0: Interactive econometric analysis*. Oxford: Oxford University Press.

Pesaran, M. H., & Shin, Y. (1999). An autoregressive distributed lag modeling approach to cointegration analysis. In S. Strom, (Eds.), *Econometrics and economic theory in the 20th century (Chapter 11).* The Ragnar Frisch centennial symposium, Cambridge: Cambridge university press.

Pesaran, M. H., Shin, Y., & Smith, R. J. (2001). Bounds testing approach to the analysis of level relationships. *Journal of Applied Econometrics, 16*(3), 289-326. https://doi.org/10.1002/jae.616

Safdari, M., & Mehrizi, M. A. (2011). External debt and economic growth in Iran. *Journal of Economics and International Finance, 3*(5), 322-327.

Sazema S.P. (2016), Dynamics of external debt and capital flight in India. *International Journal of Management & Development*, 3(2), 49-62.

Summers, L. (1986). *Debt Problems and Macroeconomic Policies*. (NBER Working Paper No. 2061), Federal Reserve Bank of Kansas City. Retrieved July 2015, from http://www.nber.org/papers/w2061.pdf

World Bank (2009), Global Development Finance 2009, Washington D.C.

Contact information:
Isaac Kwesi Ampah
University of Szeged
Dugonics tér 13., Szeged
+36 70 563 1772
ampah.isaac@eco.u-szeged.hu

Gabor David Kiss
University of Szeged
Dugonics tér 13., Szeged
+36-62-544-632
kiss.gabor.david@eco.u-szeged.hu

DOI ID: https://www.doi.org/10.7441/dokbat.2017.02